B.—COMPARATIVE STATEMENT OF TEMPERATURES AND RELATIVE HUMIDITY OF ATMOSPHERE IN DEEP LEVELS AND SOME OF THE WORKING PLACES THEREIN.

(Field Datum is 2,967·21 feet above sea level, Madras.)

Locality						Development Points and Stopes					
Horizon	Vertical depth below Field Datum (feet)	Dry Bulb °F.	Wet Bulb °F.	Difference	Relative Humidity per cent (Approximate)	Place of work	Dry Bulb °F.	Wet Bulb °F	Difference	Relative Humidity per cent (Approximate)	Remarks
CHAMPION REEF GOLD MINES OF INDIA, LIMITED.						CHAMPION REEF GOLD MINES OF INDIA, LIMITED.					
Plat, 78th level, South Development Winze ...	7,380	108·0	88·5	19·5	44·0	Stope above 78th level S., South Development Winze.	112·0	92·5	19·5	46·0	Building a masonry pack-wall in the stope 20 ft. above the level.
Drive, 80th level, S., North Main Winze ...	7,600	111·0	93·0	18·0	49·0	Stope above 80th level S., North Main Winze.	114·5	92·5	22·0	44·0	Working face 42 ft. above level; one machine drilling.
Plat, 80th level, South Development Winze ...	7,600	111·5	89·0	22·5	40·0	Stope above 80th level S., South Development Winze.	113·0	92·0	21·0	44·5	Stope 20 ft. above level; clearing down stuff.
Plat, 80th level, Heathcote Shaft ...	7,600	112·5	89·0	23·5	38·0	Drive, 80th level S., Heathcote Shaft	109·0	94·0	15·0	57·0	Near the South boundary; fixing machine bar; air pipe and fan pipe blowing.
Drive, 81st level, N., North Main Winze ...	7,700	111·0	96·0	15·0	56·0	Drive, 81st level S., North Main Winze	112·0	97·0	15·0	57·0	Drive on west lode; fixing machine bar.
Drive, 82nd level, S., Heathcote Shaft ...	7,800	110·5	94·0	16·5	54·0	Crosscut W., 82nd level Heathcote Shaft ...	114·0	91·0	23·0	41·0	
Drive. 84th level, N., from No. 1 winze below 82nd level N., Heathcote Shaft.	8,000	113·0	94·5	18·5	49·0	Drive, 84th level S., from the bottom of No. 1 Winze.	111·0	94·0	17·0	52·0	Drive advanced 50 ft. from winze; one big machine drilling.
OOREGUM GOLD MINING COMPANY OF INDIA, LIMITED.						OOREGUM GOLD MINING COMPANY OF INDIA, LIMITED.					
Plat, 70th level Auxiliary Shaft ...	6,450	109·0	91·0	18·0	49·0	Stope below the 70th level, N., Auxiliary Shaft.	113·0	95·0	18·0	50·0	Square end 30 feet deep
Plat, 78th level Auxiliary Shaft ...	7,233	110·0	92·0	18·0	49·0	Stope below 78th level S., Auxiliary Shaft ...	116·0	96·0	20·0	46·0	Square end 12 feet deep; chute full; stope on west reef.
End of crosscut E., 85th level, Bullen's Incline Shaft.	7,928	119·5	85·0	34·5	25·0	Drive, 85th level, S., Bullen's Incline Shaft.	118·5	86·0	32·5	27·0	
Plat, 85th level, Auxiliary Shaft ...	7,928	112·0	86·0	26·0	33·0	Drive, 85th level S., Anxiliary Shaft ...	115·0	87·5	27·5	31·0	Drive on central ore shoot
Drive, 87th level N., Auxiliary Shaft ...	8,128	113·0	88·5	24·5	36·0	Drive, 87th level S., Auxiliary Shaft ...	114·5	91·0	23·5	41·0	Drive on west reef; fixing machine bar; 18" dia. fan pipe blowing.
Drive, 88th level from bottom of No 3 winze below 85, S, Bullen's Incline.	8,228	115·5	96·0	19·5	47·0	Crosscut West, 88th level, from No 3 winze.	120.0	93·5	26·5	38·0	Crosscut put out 145 ft.; clearing stuff; fan pipe blowing.
Crosscut W., 88th level, Auxiliary Shaft .	8,228	114·0	89·5	24·5	37·0	Sink of Auxiliary Shaft below the 88th level.	112·5	88·0	24·5	36·0	Sink 58 feet below the level: mucking in progress; fan pipe blowing.

N.B.—The annual mean values of dry and wet bulb temperatures on surface were 75·7°F. and 66·7°F., the corresponding temperatures for the previous year being 76·4°F. and 66·7°F. respectively.

VI. Notes on Mines.

Mysore Mine.

As in the previous year, a large percentage of the total tonnage of ore crushed was obtained from the reclaimed areas in the upper levels. Though there was no appreciable variation in the grade or tonnage treated during the year 1937, the steady increase in the production which commenced in the year 1932 is being maintained. During the year 207,381 tons of ore milled and treated yielded 96,697 ozs. of fine gold and in addition 1,000 ozs. were obtained from scalings and 400 ozs. from the dismantling of the old treatment plant, making a total of 98,097 ozs. showing a slight increase of 1706 ozs. over that of last year. The total realisation amounted to £683,480 compared with £677,838 and a dividend of 2sh. 9d. per share or 27½ per cent which is the same as that of the last year was distributed.

Development.—Exploratory work carried out to prove the continuity of the ore shoots discovered in the lower levels of the mine last year has resulted in exposing considerable lengths of payable reef in spite of the disturbances caused by pegmatitic intrusions. A winze sunk on the reef between Edgar's Sub-Vertical and North Auxiliary Vertical Shafts in the 84th level has exposed payable reef for a depth of over 200 ft. Driving along this reef at the 85th and 86th levels is being carried on at present to prove its length. Levels have been commenced from the several shafts at the horizon of the 88th level and the lode-channels met with are indicative of a strong reef. This exploratory work at the deepest horizon of the mine is being watched with interest.

In addition to the new discoveries at the bottom levels of the mine, the upper levels which are being opened up have been making substantial contributions to the ore reserves. It is particularly interesting to note, that large bodies of ore of great width and good values have been found in the upper levels of McTaggart's Incline, Rowses' and Plummer's Shafts. Exploration of the top levels of Tennant's Section has been commenced between 180 and 600 ft. levels and it is hoped that a considerable tonnage of payable ore will be made available shortly.

The ore reserves at the end of the year were estimated at 449,000 tons showing an increase of 9,000 tons.

Shaft Sinking.—Edgar's Sub-Vertical Shaft, the most important of all the secondary Shafts reached the 89th level and the equipment of the shaft has been completed from the 51st to the 88th level. Electrically operated single decked cages have been put into commission as a temporary measure and truck hoisting is being carried on. Sinking below the 88th level is in progress at present.

The North and South Auxiliary Vertical Shafts were also sunk to the 88th and 89th levels respectively and equipped to the former level.

Ventilation.—No change was effected during the year in the ventilation of the mine. The work of smooth lining of the up-cast airways was continued during the year. At the 84th level communication was established during the year between Edgar's Sub-Vertical and South Auxiliary Vertical Shafts resulting in the passage of 15,100 cubic ft. of air per minute in this level and through communication has also been established between the North Auxiliary Vertical Shaft and Edgar's Sub-Vertical Shaft at the 88th level with resultant improvement in ventilation at the bottom of the mine. Auxiliary fans and blowers are used to deliver an adequate quantity of fresh air to the development ends and sinks.

General.

McTaggart's Incline Shaft, which is a compound shaft, with a vertical portion from surface for 120 ft. is being converted into a simple incline shaft by sinking a new incline from surface to communicate with the bottom of the vertical portion. This arrangement when completed will remove the existing bend in the shaft which is causing excessive wear of the hoisting rope and will greatly facilitate the hoisting of men and material.

The deepest working point in the mine was the sink of North Auxiliary Vertical Shaft, which was 7,653 ft. below Field datum.

An interesting change in the metallurgical practice is being effected in the concentration plant to recover a large quantity of free gold so that it can be smelted into a bar direct without the necessity of amalgamation.

A plant for treating timber with metallic salts for preserving it, has been erected in the compound of Edgar's Shaft.

The accident prevention propaganda is being carried on vigorously and "safety first" lectures are held regularly. Long trousers, knee-pads, goggles and other protective appliances are being freely used by the workmen. In the "First-Aid Examination" held by the Medical Officer, 35 workmen were declared as having passed during the year.

The erection of a bath room at the top of Edgar's Shaft where 20 men can bathe in privacy simultaneously, one in each cubicle, is nearing completion and a continuous supply of warm water will be provided.

Champion Reef Mine.

The most important achievement of the year has been the completion of the extension of Gifford Shaft from the 42nd to the 70th level and thereby making it one of the deepest primary Shafts in the World with a vertical depth of 6,556 ft. below surface. The equipment of the new portion of the shaft with 96 lb. steel rail guides for the two cages has been commenced and the 70th level plat is being laid out for truck hoisting. On surface, a large engine house for the new electric winder has been built and the foundation for the hoist has been laid. As all the preparations for the erection of the winder have been completed, the work will be put in hand as soon as the winder parts are delivered on the mine. The head-gear is being reinforced and the new double deck cages are being made in the work shops.

The highly satisfactory development work during the year has resulted in increasing the ore reserves by 25,456 tons, making a total of 496,605 tons against 471,449 during the previous year. As anticipated last year, considerable lengths of payable ore have been opened up both in the N. and S. sections of the mine. During the year, the Glen ore shoot at the 82nd level was proved to a considerable distance with satisfactory widths and values. A number of winzes that are being sunk on this reef to the 84th level, have disclosed its continuity in depth and at the same time, the widths and values do not show any appreciable decrease In the North Section, the development work on the folds of the reef at the several levels between the 76th and the 81st level has disclosed the existence of a very wide payable reef. The 80th level N. was driven to the boundry and holed into the 82nd level of the Ooregum Mine to provide an emergency exit to both Mines.

Reclamation work carried out in the upper levels of the mine has resulted in exposing certain pillars of ore which could be safely extracted now. The opening up of No. 1 level S. Glen's Primary Shaft has given access to certain blocks of ore lying between the old workings and the back of No. 2 level. Preparations have been completed for stoping Ribblesdale's Shaft pillar at the 800 ft. level.

The year's operations resulted in the production of 70,014 oz. of gold from 151,050 tons of ore milled and the total realisations amounted to £487,812. A dividend of 4s. 3d. per share or 42½ per cent was distributed as against 45 per cent for the previous year.

Ventilation — The work of clearing Glen's Primary Shaft at various levels and smooth lining the portions opened up, has been in progress throughout the year. The top portion of Ribblesdale's Shaft has also been cleared and smooth lined during the year from surface to the 5th level. Three electrically driven Sirroco fans with a capacity of 10,000 cubic ft. per minute have been installed at the 80th, the 81st and the 82nd levels to improve the circulation of air at the bottom levels.

The average quantity of downcast air entering the mine was 111,077 cubic ft. per minute with a temperature of 74°F. dry and 67°F. wet. At the 82nd level, Heathcote Shaft—the lowest level in this shaft—the downcast volume of air averaged 10,333 cubic ft. per minute and the average temperatures were 111°F. dry and 83°F. wet.

General.—The deepest working point in the mine is the 84th level plat Heathcote Shaft, 8,029 ft. vertically below field datum.

There has been no alteration in the method of supporting ground as granite packwalls have proved to be satisfactory. During the year 31,332 tons of granite were lowered for this purpose.

The accident prevention campaign and welfare work is being carried on vigorously and the workmen have begun to appreciate the benefits derived from these two schemes.

Ooregum Mine.

The erection of the Ammonia Compressor type cooling plant described in last year's report has been completed and the necessary alterations for reversing the existing ventilation circuits underground are being effected expeditiously to put the plant into commission early.

In spite of the exhaustion in August 1937 of the old tailings dumps which were contributing about 1,000 ozs. every month, the average monthly production was maintained by increasing the tonnage of current ore milled. During the year 50,776 ozs. of fine gold were obtained from 155,338 tons of current ore and 138,624 tons of tailings as compared with 51,159 ozs. produced during the previous year from 147,282 tons of current ore and 249,274 tons of old tailings. The total realisations amounted to £353,756 and a dividend of 1sh. 6d. per share or 15 per cent on the preference and 6d. per share or 5 per cent on ordinary shares as against 17½ per cent and 7½ per cent respectively last year were distributed.

Though there has been a slight increase in the assay value of the ore from 5·44 to 5·64, the grade still remains to be the lowest on the Field.

Development.—The west reef and the Central ore-shoot which were struck at the various horizons between the 80th and the 84th levels in the southern section of the mine during the last year have been proved in depth and it is gratifying to note that considerable lengths of good widths and values have been opened up. The development so far carried out on this reef at the 84th and 85th levels has been distinctly encouraging, and the 86th level is being explored at present. The central ore shoot which runs parallel to the west reef in these levels did not disclose the same encouraging features though some rich patches were met with occasionally.

The development work carried out in Bullen's and Oakley's Sections at the 84th, 85th and 86th levels did not disclose anything of value as the area explored was still found to have been disturbed by pegmatitic intrusions.

Diamond drilling at selected points at the 81st and the 84th levels in Auxiliary Section and at the 82nd level in Bullen's Section was also carried out during the year but beyond obtaining certain geological data nothing of value was discovered.

Reclamation work carried out in the upper levels in Bullen's Section at the 28th level and at the 17th level in Oakley's section has resulted in opening up certain blocks of payable ore which had become inaccessible.

The sinking of Bullen's Incline and Auxiliary Shafts were continued during the year and they reached vertical depths of 8,290 ft. and 8,251 ft. respectively, below Field Datum and these are the deepest working points in this Field. The 88th level plats have been completed in both these shafts.

The reserves of ore at the 31st December 1937 were estimated at 233,712 tons showing an increase of 14,088 tons over that of last year.

General. -The General Welfare and Accident Prevention committees are working satisfactorily with continued benefits to the workmen. A large number of old type of workmen's houses have been replaced by dwellings of better design providing greater accommodation.

Nundydroog Mine.

Though the tonnage of current ore milled during the year was increased by 13,454 tons, the yield was decreased by 4,185 ozs. owing to a slight reduction in the grade of ore from 9·50 dwt. to 8·65 dwt. During the year 253,700 tons of current ore milled produced 107,311 ozs. of gold and 101,300 tons of old tailings re-treated yielded 4,640 ozs. making a total of 111,951 ozs. as compared with the total recovery of 114,114 ozs. in 1936. The realisations amounted to £779,810 and the dividend distributed was 6sh. 6d. per share equal to 65 per cent as compared with 72½ per cent in the previous year, showing a fall of 7½ per cent.

Development.—Though no new discovery of any importance was made in Kennedy's and Oriental Sections during the year, the development carried out at the 64th and the 65th levels exposed considerable lengths of payable reef. The lode widths gradually began to diminish in depth but values increased with the decrease in width. The driving of the 64th level has been completed but the 65th level has only been partly opened up.

At the 65th level in Kennedy's Section, a short length of payable reef was opened up close to No. 2 Auxiliary Shaft and exploratory work carried out in depth on this reef, proved it to be of greater length at the 66th level with increased values but indications of pegmatitic intrusions have begun to appear causing uncertainty as to its continuity.

The most satisfactory results were obtained in Taylor's Section where driving on the folds exposed good lengths of high grade ore. At the 54th level, the drive on the Eastern link of the fold exposed reef of over 2 ft. in width and of high assay value. Between the 63rd and the 66th levels S. No. 3 Auxiliary Shaft a large body of payable ore of good width has been opened up. At the 67th level, the shaft crosscut has intersected the reef and the result of development work at this horizon is being watched with interest.

The sinking of all the Auxiliary Shafts except No. 4 was continued during the year and the deepest working point in the mine was the sink of No. 3 Auxiliary Shaft which was 6,869 ft. below Field Datum.

The ore reserves at the 31st December 1937 were estimated at 588,126 tons, an increase of 6,581 tons.

Ventilation.—At the 48th level North, the new 75" propeller fan was put into commission during the latter part of the year resulting in improvement in the ventilation of the north section of the mine. The old 55" "Sirocco" fan is retained in its position to serve as a standby in case of necessity. Ogle's Main Winze in the north section of the mine has been completely stripped to form an effective upcast air way.

General.—The Nine Reefs Mine, having been worked out, was closed down but work is being carried on at the Road Block Mine which has been dewatered to the 500 ft. level. Arrangements are also in progress to open up an old shaft in the old Golconda Block which has now become part of this mine.

Certain additions and alterations were made in the reduction works to improve the efficiency of the plant. Power transmission through shafting is being gradually eliminated and individual unit drives are taking their places.

The acid plant has been moved to the Extractor House and the melting room has been enlarged and the furnaces have been re-arranged resulting in a substantial saving in time.

VII. Electric Power Supply.

(*a*) *Cauvery System.*

The following statement kindly furnished by the Chief Electrical Engineer to Government, shows the number of motors in service and the power consumed by the different mines during the calendar year 1937 :—

Name of Mine	Number of motors in service	Nominal H. P.	Rated H. P.	Average constant H. P. absorbed	Annual consum.ptio n in B. T U.
Mysore ...	57	5,046·0	4,256	3,430	22,419,597
Champion Reef ...	27	5,250·0	4,869	3,597	23,510,050
Ooregum ...	44	5,156·0	4,033	2,898	18,942,100
Nundydroog ...	44	6,794·5	5,424	3,986	26,049,800
Total ...	172	22,246·5	18,582	13,911	90,921,547

(b) Kolar Mines Power Station, Limited.

The following notes have been kindly furnished by Mr. E. A. Eborall, Ag. Chief Electrical Engineer, for the year ended 30th June 1938.

At the 30th June last, 357 motors with an aggregate horse-power of 30,266·625 were connected to this company's distribution systems and of that number, 110 motors aggregating 21,849·250 H. P. were operating Winding Engines and Hoists, while the remainder, namely 247 motors with a total of 8,417·375 H. P. were being used to drive intermittent loads of other classes.

The consumption of power for different purposes, during the year is given in Board of Trade Units:—

Intermittent Power.	*Hoisting.*	*Lighting.*	*Refrigerator.*	*Total Units sold.*
10,315,219	15,540,293	901,414	22,305	26,779,231

The rates prevailing at 30th June 1938 were as follows:—

Intermittent Power	0·4 d.
Hoisting	0·55 d.
Lighting	4·5 d.
Refrigerator	0·75 d.

The horse-power of 184 motors which were connected to the Cauvery System at June 30th totalled 18,617 H. P. at Government ratings, or 23,867 at Manufacturers' ratings. Adding the latter figure to the figure for the Kolar Mines Power Station, Limited, a total of 54,133·625 is arrived at, as the total horse-power of motors in service on the Mines at 30th June 1938.

No stoppages owing to scarcity of water were experienced during the period in question.

COMPARATIVE STATEMENT OF POWER CONSUMPTION.

Official year	Cauvery Power		Kolar Mines Power		Total number of motors in use	Total consumption in B. T. U. from both stations
	Number of motors in use	Annual consumption in B. T. U.	Number of motors in use	Annual consumption in B. T. U.		
1924–25 ...	165	95,533,550	164	7,662,490	329	103,196,040
1925–26 ...	166	90,421,604	172	8,262,284	338	98,683,888
1926–27 ...	149	85,214,687	198	11,149,016	347	96,363,703
1927–28 ...	143	97,190,966	219	13,968,284	362	111,159,250
1928–29 ...	151	84,109,600	237	14,557,406	388	98,667,006
1929–30 ...	156	80,945,652	260	15,071,035	416	96,016,687
1930–31 ...	158	82,646,288	276	18,405,923	434	101,052,211
1931–32 ...	161	75,766,200	273	18,501,739	434	94,267,939
1932–33 ...	163	76,133,500	270	19,364,667	433	95,498,167
1933–34 ...	160	81,360,300	264	21,310,574	424	102,670,874
1934–35 ...	161	87,954,150	303	21,016,580	454	108,970,730
1935–36 ...	160	87,335,710	321	22,874,806	481	110,210,516
1936–37 ...	165	89,392,866	343	25,380,309	508	114,773,175
1937–38 ...	174	91,978,738	357	26,779,231	531	118,757,969